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**SHORT FIBER NON-WOVEN FABRICS AND ABSORBENT GOODS WHICH  
USES THAT**

[短纖維不織布およびそれを用いた吸収性物品]

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(57) [Abstract]

[Problems to be Solved by the Invention]

texture being satisfactory with bulky, at same time, the compression recovery ratio to be high must offer non-woven fabrics where flow rate is fast.

[Means to Solve the Problems]

short fiber which consists of hot-melt adhesiveness multi-component fiber is dispersed is arranged by the random and accumulates, at same time intersection of said fiber with non-woven fabrics which hot-melt adhesion is done, as for hot-melt adhesiveness multi-component fiber has actual crimp, at the same time fiber length 3 - 40 mm, fineness with 30 - 80 denier, density of said non-woven fabrics are 0.1 g/cm<sup>3</sup>, or less are compression recovery ratio 80 % or more and with short fiber non-woven fabrics which is made feature.

[Claim(s)]

[Claim 1]

short fiber which consists of hot-melt adhesiveness multi-component fiber being dispersed being arranged by random, it accumulates, at same time fiber intersection with the non-woven fabrics which hot-melt adhesion is done, as for said hot-melt adhesiveness multi-component fiber has actual crimp, at the same time fiber length 3 - 40 mms, fineness with 30 - 80 denier, density of the said non-woven fabrics are 0.1 g/cm<sup>3</sup>, or less are compression recovery ratio 80 % or more and short fiber non-woven fabrics which is made feature

[Claim 2]

short fiber non-woven fabrics which is stated in Claim 1 which is a hot-melt adhesiveness multi-component fiber where the hot-melt adhesiveness multi-component fiber, consisted of low melting point resin and high melting point resin where melting point difference is 10 deg C or greater, at same time low melting point resin fiber surface continuing part at leas tin longitudinal direction, was formed

[Claim 3]

hot-melt adhesiveness multi-component fiber as low melting point resin short fiber non-woven fabrics which is stated in Claim 1 or 2 which is a multi-component fiber which uses polypropylene making use of polyethylene, as high melting point resin

[Claim 4]

hot-melt adhesiveness multi-component fiber as low melting point resin short fiber non-woven fabrics which is stated in Claim 1 or 2 which is a multi-component fiber which uses polyethylene terephthalate making use of polyolefin, as high melting point resin

[Claim 5]

short fiber non-woven fabrics which is stated in either of Claim 1~4 where hot-melt adhesiveness multi-component fiber is crimp frequency 3~20 crimps/25 mm

[Claim 6]

short fiber non-woven fabrics, short fiber non-woven fabrics which is stated in either of Claim 1~5 which is a non-woven fabrics which is acquired by air laying method

[Claim 7]

laminate thermal processing doing short fiber non-woven fabrics and sheet which are stated in either of Claim 1~6, short fiber non-woven fabrics laminate which is acquired

[Claim 8]

absorbent goods which uses short fiber non-woven fabrics which is stated in either of Claim 1~6 or short fiber non-woven fabrics laminate which is stated in Claim 7

[Claim 9]

wipe which uses short fiber non-woven fabrics which is stated in either of Claim 1~6 or short fiber non-woven fabrics laminate which is stated in Claim 7

[Description of the Invention]

[0001]

[Technological Field of Invention]

this invention regards short fiber non-woven fabrics etc.

Furthermore details regard short fiber non-woven fabrics laminate, absorbent goods, or wipe which uses short fiber non-woven fabrics and said short fiber non-woven fabrics.

[0002]

[Prior Art]

Until recently, as stated in Japan Examined Patent Publication Sho 5 2- 12830 disclosure as short fiber non-woven fabrics, carding it does hot-melt adhesiveness multi-component fiber making use of carding machine and after making web, thermal processing it does, non-woven fabrics which glues intersection of fiber is known.

But those which as for the above-mentioned non-woven fabrics hooking fiber making use of short fiber of 38 mm or greater where fiber length is long relatively, with needle, in order to arrange into machine direction, fiber of major portion orientation has made machine direction, orientation has not done for most part to transverse direction and thickness direction.

Therefore highly functional non-woven fabrics which possesses good quality and high compression recovery ratio and high flow rate of bulk and texture simultaneously is not acquired.

In addition but, existence of non-woven fabrics which uses fiber where the fiber length is short is seen in past, non-woven fabrics of high functionality the above-mentioned way in same way is not acquired.

[0003]

[Problems to be Solved by the Invention]

As for objective of this invention, texture being satisfactory with the bulky which improves these deficiency, at same time, compression recovery ratio to be high is to offer non-woven fabrics where flow rate is large.

As for these inventors, as for result of repeating diligent investigation in order to achieve the above-mentioned objective, laminate designating hot-melt adhesiveness multi-component fiber of fiber length 3~40 mm, fineness 30~80 denier as random, below density 0.1 g/cm<sup>3</sup>, it makes short fiber non-woven fabrics where the fiber joining point is connected, being bulky, texture satisfactory, compression recovery ratio is high, at same time, flow rate is made quick, effective, you knew, this invention reached to completion.

[0004]

[Means to Solve the Problems]

Solves aforementioned problem could do this invention, with the constitution below.

short fiber which consists of (1) hot-melt adhesiveness multi-component fiber being dispersed being arranged by random, it accumulates, at same time fiber intersection with non-woven fabrics which hot-melt adhesion is done, as for said hot-melt adhesiveness multi-component fiber has actual crimp, at the same time fiber length 3 - 40 mm, fineness with 30 - 80 denier, density of said non-woven fabrics are 0.1 g/cm<sup>3</sup>, or less are compression recovery ratio 80 % or more and short fiber non-woven fabrics which is made feature

short fiber non-woven fabrics which is stated in Claim (1) which is a hot-melt adhesiveness multi-component fiber where the(2) hot-melt adhesiveness multi-component fiber, consisted of low melting point resin and high melting point resin where melting point difference is 10 deg C or greater, at same time low melting point resin fiber surface continuing part at least in longitudinal direction, was formed

(3) hot-melt adhesiveness multi-component fiber as low melting point resin short fiber non-woven fabrics which is stated in Claim (1) or (2) which is a multi-component fiber which uses polypropylene making use of the polyethylene, as high melting point resin

(4) hot-melt adhesiveness multi-component fiber as low melting point resin short fiber non-woven fabrics which is stated in Claim (1) or (2) which is a multi-component fiber which uses polyethylene terephthalate making use of the polyolefin, as high melting point resin

(5) hot-melt adhesiveness multi-component fiber is crimp frequency 3~20 crimps/25 mm, (1) - short fiber non-woven fabrics which is stated in either of Claim (4)

(6) short fiber non-woven fabrics, is non-woven fabrics which is acquired by air laying method, (1) - the short fiber non-woven fabrics which is stated in either of Claim (5)

(7) (1) - laminate thermal processing doing short fiber non-woven fabrics and sheet which are stated in either of Claim (6), short fiber non-woven fabrics laminate which is acquired

(8) (1) - absorbent goods which uses short fiber non-woven fabrics which is stated in either of Claim (6) or short fiber non-woven fabrics laminate which is stated in Claim (7)

(9) (1) - wipe which uses short fiber non-woven fabrics which is stated in either of Claim (6) or short fiber non-woven fabrics laminate which is stated in Claim (7)

[0005]

[Embodiment of the Invention]

Those of 3 - 40 mm where fiber length is short relatively are used for short fiber non-woven fabrics of this invention.

When fiber length is long, fiber orientation is easy to make machine direction, satisfactory ones of texture hard to be acquired empty.

It removes orientation of fiber this kind of short fiber by dispersing arranges into random, it can make non-woven fabrics which possesses intensity in relation to all directions.

Furthermore fineness 30 - 80 denier relatively uses fiber which possesses actual crimp of thick fineness, when gluing of fiber intersection bulkiness of non-woven fabrics can be maintained and due to fact that its fiber is hot-melt adhesiveness multi-component fiber, at same time compression recovery ratio it is high, non-woven fabrics where the liquid permeability is large can be acquired.

[0006]

Below, this invention is explained concretely.

Concerning hot-melt adhesiveness multi-component fiber which is used with this invention, you can use the resin etc below at least with 2 component (You call below ingredient A, ingredient B) as starting material.

for example polypropylene, high density polyethylene, medium density polyethylene, low density polyethylene, linear low density polyethylene, propylene and the  $\alpha$  olefin (Containing ethylene) with crystalline polypropylene copolymer or other polyolefin, you can use, in addition spin able resin etc such as mixture of low melting polyester, polyester elastomer or other polyesters, fluoroplastics, the above-mentioned resin which copolymerizes polyamide, polyethylene terephthalate, polybutylene terephthalate, diol and terephthalic acid/isophthalic acid etc.

[0007]

As for melting point difference of A, B component resin there are 10 deg C or greater, it is desirable.

Because of this, if thermal processing it does with temperature under melting point of melting point or higher, high melting point component of low melting point component, low melting point component of multi-component fiber being melted, the fiber joining point is done thermo-bonding, high melting point component hot-melt adhesion of network structure of three-dimensional which remains that way can form short fiber non-woven fabrics which is done.

This kind of, as combination of A, B component resin, crystalline copolymer, high density polyethylene/polyethylene terephthalate, nylon-6/nylon 66, low melting polyester/polyethylene terephthalate, polypropylene/polyethylene terephthalate, polyvinylidene fluoride/polyethylene terephthalate, linear low density polyethylene of ethylene which makes for example high density polyethylene/polypropylene, low density polyethylene/propylene main and mixture/polypropylene etc of high density polyethylene can be illustrated.

Combination of preferably, polyethylene/polypropylene, polyolefin/polyethylene terephthalate is desirable.

When polyolefin is used for hot-melt adhesiveness multi-component fiber, flexibility or other texture of non-woven fabrics become good, simultaneously, can acquire non-woven fabrics which holds polyolefin peculiar lightness, water-buoyancy or other performance.

In addition, polyethylene terephthalate is used for high melting point component, because melting point difference of the high melting point component and low melting point component becomes large, depending upon, fabric ability to non-woven fabrics becomes easy, it can make bulky non-woven fabrics.

[0008]

Furthermore, as needed according to need it is possible to resin which is used for ingredient A and ingredient B which relate to this invention, to add the antioxidant, photo stabilizer, ultraviolet absorber, neutralizing agent, nucleating agent, epoxy stabilizer, lubricant, antibiotic, flame retardant, antistatic agent, pigment, plasticizer or other additive inside range which does not obstruct effect of this invention.

[0009]

If morphological form of multi-component fiber with multi-layer type, hollow multi-layer type, different shape multi-layer type, island type etc of scabbard-core type, parallel type, three layers or more, at the same time in aforementioned A, B component resin, is structure where low melting point component resin formed at least portion of fiber surface, it is good, those which are continued in fiber length direction are desirable.

#### [0010]

In said multi-component fiber, as for composite ratio of low melting point resin and high melting point resin low melting point resin 10-90 weight %, high melting point resin is 10 - 90 weight %.

preferably, low melting point resin 30 - 70 weight %, high melting point resin is 30 - 70 weight %.

When low melting point resin component is under 10 weight %, non-woven fabrics tenacity becomes small depending upon hot-melt adhesion insufficiency.

In addition, when low melting point resin component exceeds 90 weight %, because regular hot-melt fiber and similar hot-melt adhesion behavior are shown, it means with that characteristic that decreases high melting point component of multi-component fiber keeps fibrous morphological form.

#### [0011]

fineness of hot-melt adhesiveness multi-component fiber with 30 - 80 denier, is preferably 40~60 denier.

But density of extent non-woven fabrics where fineness becomes small becomes small either, it becomes bulky, because constituent number of the hot-melt adhesiveness multi-component fiber which forms non-woven fabrics of per unit volume becomes many, volume of per each of empty gap inside non-woven fabrics small or, flow rate small.

Furthermore, it is a tendency where compression recovery ratio decreases.

In addition, when fineness becomes large, it is a tendency where the passed water velocity becomes quick, but when fineness becomes too large, void fraction inside non-woven fabrics to decrease, in addition, because shape of the empty gap it becomes shape which is various, flow rate decreases, density of non-woven fabrics to be large or, because thickness becomes small, It makes bulky non-woven fabrics with satisfactory texture, it is difficult.

Namely, in order it becomes bulky with satisfactory texture and compression recovery ratio is high, to make passed water velocity quick, fineness being too small, being too large, under differing and especially 30 denier which impair balance when passed water velocity decreases, becomes larger than 80 denier it becomes tendency where density becomes too large.

#### [0012]

fiber length of hot-melt adhesiveness multi-component fiber can use 3 - 40 mm, but preferably, 3~20 mm, furthermore it is a preferably 5~15 mm.

When fiber length is under 3 mm, tenacity of non-woven fabrics becomes small, density of non-woven fabrics becomes large.

In addition, when fiber length greatly exceeds 40 mm, entanglement between fiber becomes large and random dispersion arrangement is easy to become difficult.

Therefore, it makes uniform texture, uniform tenacity, it becomes difficult, thickness of non-woven fabrics becomes small, density of non-woven fabrics becomes large.

#### [0013]

crimp frequency of hot-melt adhesiveness multi-component fiber is 3 - 20 crimps/25 mm, it is desirable.

When crimp frequency is under 3 crimps/25 mm, density when it makes non-woven fabrics becomes high either, when it exceeds 20 crimps/25 mm much, entanglement between fiber large or, it makes uniform texture, difficult or, individual empty gap size inside non-woven fabrics small.

In addition, you can use crimp shape, any shape such as those which possess zigzag type or other two dimensions crimp, spiral type, ohm type or other steric three-dimensional crimp etc.

[0014]

hot-melt adhesiveness multi-component fiber which is used for short fiber non-woven fabrics of this invention is producible with step below for example.

It melts resin of core component and scabbard component, discharges from the conjugate fiber spinneret.

not stretched fiber is cooled this time, by air cooling doing spinneret directly below.

extrusion amount and take-up speed are set to option, not stretched fiber of thickness of 2 - 7 times extent of goal denier is produced.

velocity between roll which heats said not stretched fiber to 40 deg C~120 deg C 1: from 2 is set between one pair 7 and drawn fiber of 30 - 80 denier is produced by drawing.

In said drawn fiber coating fabric after doing surface agent, passing the crimping process machine of box type with touch roll, it produces tow which grants crimp.

It dries said tow, with 60 deg C~120 deg C making use of dryer.

It overcomes tow which it dries and in range of fiber length 3~40 mm it cuts off fiber in fixed fiber length making use of cutter.

[0015]

As for short fiber non-woven fabrics of this invention, density is 0.1 g/cm<sup>3</sup> or less.

When density exceeds 0.1 g/cm<sup>3</sup> largely, void fraction of non-woven fabrics internal becomes small, because flow rate decreases considerably, is not desirable.

[0016]

As for short fiber non-woven fabrics of this invention, compression recovery ratio is 80% or more.

When compression recovery ratio is less than 80% largely, short fiber non-woven fabrics while compressed by pressure it becomes difficult to reconstruct, non-woven fabrics density increases, because flow rate it decreases, is not desirable.

[0017]

As for weight of short fiber non-woven fabrics of this invention there are not times when especially it is limited. Those where weight is 5 - 1000 g/m<sup>2</sup> are desirable, more preferably 300~600g/m<sup>2</sup> is used.

But, use range differs depending upon various application, in case of the surface material or other of for example liquid absorbent goods, when 5 - 60 g/m<sup>2</sup>, absorbent goods and wipe, or clothing incase of filler or other, they are 10 - 500 g/m<sup>2</sup>, filter, they are 8 - 1000 g/m<sup>2</sup>.

[0018]

short fiber non-woven fabrics of this invention uses aforementioned hot-melt adhesiveness multi-component fiber, etc disperses said fiber and gets off and product leaks it forms web the for example air laying method and said fiber which are a so-called short fiber dispersed falling bottom mold a way making use of paper laying method or other web production device which it disperses accumulates in the liquid, furthermore with heat treatment machine thermal processing does with temperature of the hot-melt adhesion temperature or higher and it is acquired by hot-melt adhesion doing intersection of fiber.

As web production device, dispersing fiber, it gets off and product leaks air laying method is desirable.

As for short fiber non-woven fabrics which is acquired with air laying method bulk becomes high, density of non-woven fabrics is designated as small ones, becomes easy.

Aforementioned way dispersing fiber, it gets off and product leaks approximately for example, left and right, it vibrates to top and bottom, horizontal round or other either as web production device of for example air laying method which is a so-called short fiber dispersed falling bottom mold a way, equipment of box shape sieve type which it disperses falls from eye of sieve can use short fiber.

perforated metal sheet of also, net forms in cylinder and it possesses the inlet of fiber in side surface, equipment etc of net cylindrical type which it disperses falls from that eye can use fiber.

[0019]

Making use of aforementioned web production device, in order from eye of sieve random dispersing falling short fiber, to laminate on the net conveyor or other web collecting equipment which is arranged in bottom, it collects, it heats to the temperature of melting point or lower of low melting point components or more, clogging hot-melt adhesion temperature or higher high melting point component furthermore making use of heat treatment machine and glues intersection of short fiber, makes short fiber non-woven fabrics of the this invention.

air slew type heat treatment machine, embossing roll type heat treatment machine, flat roll type heat treatment machine etc and, equipment etc which either combines can use heat treatment machine of aforementioned web.

Especially when air slew type heat treatment machine is used, bulky non-woven fabrics is acquired.

[0020]

Because short fiber non-woven fabrics of this invention has used short fiber where fiber length quite is short, each fiber doing random dispersion arrangement with the various anisotropy, it is laminated.

Because intersection of multi-component fiber hot-melt adhesion is done with this state, the matrix structure which is suited for quite water permeability in structural is formed.

Furthermore 30 - Because calls 80 denier fiber of medium fineness domain is used relatively, by comparison with fineness under 10 kind of denier which are used until recently with absorbent goods, because modulus is high, load adding, matrix structure is difficult to be destroyed.

As a result, compression recovery ratio becomes large.

Therefore, compaction designating absorbent goods as when storing or when conveying, because it is superior in bulk recoverability, it can maintain the satisfactory water permeability.

Because of this, because urine, warp blood etc to be quick passed water is done to absorber internal, it is superior even in feeling on the skin.

[0021]

Or it jointly uses short fiber non-woven fabrics of this invention, with other various sheet, for example other non-woven fabrics, liquid absorber, fabric, film, wooden board, metal sheet etc with that alone, does various composite morphology for example laminate, stitching, hot-melt adhesion, etc can acquire short fiber non-woven fabrics laminate of this invention.

You can use short fiber non-woven fabrics, or short fiber non-woven fabrics laminate of this invention which it acquires in this way for various application.

As absorbent goods of for example this invention, when you use, as one member of disposable diaper the water absorption rate and site, for example absorber, top sheet etc where both of absorbing water retention is required can be listed.

Of course, when you use for diaper etc, it jointly uses, with other member such as shank part, and extending and retracting member in order to stick leg can use with various site for example surface material, cover, backing material etc.

[0022]

As absorbent goods of this invention, you can use short fiber non-woven fabrics of this invention as the material of paper diaper or other liquid absorbent goods.

urine and is absorbed sheet etc which sucks up wipe, liquid which sucks up infant paper form diaper, feminine napkin, scar vat, perspiration absorbing pad, liquid which absorbs newborn paper form diaper, urine which mainly can illustrate soft flight etc as embodiment of kind of absorbent goods.

Main point if a goods which absorbs liquid it should have been.

[0023]

absorbent goods which uses short fiber non-woven fabrics of this invention when using, as absorbent goods because flow rate is superior, absorbency of liquid being satisfactory and, can keep absorbency even at time of fine added pressure which depends on worn time due to fact that compression recovery ratio is superior.

[0024]

wipe of this invention being possible to deposit, can use various lubricant etc for furniture, car etc.

for example fiber diameter is laminated and extremely thin fiber non-woven fabrics and short fiber non-woven fabrics of 10;mu m or less can make non-woven fabrics laminate of composite structure where both layers glues.

You can use non-woven fabrics laminate of this composite structure for wipe and paper diaper etc.

In addition, pleat you snap short fiber non-woven fabrics, while furthermore forming in cylinder, winding short fiber non-woven fabrics, forming in cylinder, heating the short fiber non-woven fabrics winding, it can designate layer of that as filter material with or other post processing which forms in cylinder which hot-melt adhesion it does.

[0025]

[Working Example(s)]

this invention is explained below, with Working Example, but this invention is not something which is limited in these Working Example.

Furthermore, collecting measurement method or definition of property value which is shown in Working Example, it shows.

It measured according to crimp frequency: JIS-L-1015.

It measured according to single fiber fineness: JIS-L-1015.

measured weight it did weight of molded article which is cut in weight:50 cm square, displayed with weight (g/m<sup>2</sup> ) of per unit surface area.

It sought with formula below density:.

$$\text{density (g/cm}^3\text{)} = 1 / \{ \text{thickness (mm) / weight (g/m}^2\text{)} \times 1000 \}$$

thickness (A ) of non-woven fabrics molded article which is cut in compression recovery ratio:10 cm X 10 cm was measured, the weight of 5 kg was placed and 24 hours leaving later, weight was removed and thickness (B ) of 15 min later was measured, change of the thickness with approximately of load was displayed with formula below.

$$\text{compression recovery ratio (\%)} = (B) / (A) \times 100$$

According to flow rate: liquid strike slew thyme method (EDANA-ERT § 150. 3), test solution artificial urine (72 mN/m, 20 deg C ), it measured measurement solution quantity as 15 ml.

unit is second.

Namely test solution is something which is displayed with time (seconds )which 15 ml passed liquid is done.

[0026]

It shows in "Working Example 1~11, Comparative Example 1~6 " Table 1, using first component and second component, making the multi-component fiber making use of scabbard-core type or parallel type spinneret, cutting off in predetermined length, administering processing with condition which it shows in Table 1 it acquired short fiber non-woven fabrics.

PP 250 deg C, PET 300 deg C, PE being 220 deg C (In scabbard core relation) concerning spinning temperature, scabbard-core ratio 5: melt spinning it did yarn-spinning, with 5 (weight ratio ).

Furthermore with similar condition spinning it designated the Working Example 2 as parallel type.

Granted crimp with draw ratio of 3 - 5 times making use of the crimper drawing with roll temperature as 100 deg C.

However, in case of Working Example 2 you did not use crimper and made the natural crimp.

It showed result in Table 1, it showed flow rate of short fiber non-woven fabrics which is shown in Table 1 in Table 2.

[0027]

[Table 1; Translation]

1. Number
2. Scabbard ingredients
3. Core ingredients
4. Denier (d/f)
5. Fiber length (mm)
6. Number of reeling (mountain/25mm)
7. Web manufacturing method
8. Heat processing method

9. Heat processing temperature (°C)
10. Heat processing time (seconds)
11. Pressure recovery rate (%)
12. Density (g/cm³)
13. Weight (g/cm²)
14. Carried out example 1
15. Carried out example 2
16. Carried out example 3
17. Carried out example 4
18. Carried out example 5
19. Carried out example 6
20. Carried out example 7
21. Carried out example 8
22. Carried out example 9
23. Carried out example 10
24. Carried out example 11
25. Comparison example 1
26. Comparison example 2
27. Comparison example 3
28. Comparison example 4
29. Comparison example 5
30. Air laid method
31. Air laid method
32. Air laid method
33. Air laid method
34. Air laid method
35. Paper creation method
36. Air laid method
37. Air laid method
38. Air laid method
39. Air laid method
40. Air laid method
41. Air laid method
42. Air laid method
43. Air laid method
44. Air laid method
45. Card method

[Table 1]

第 1 表

番号	鞘成分	芯成分	デニール (d/f)	繊維長 (μm)	捲縮数 (山/25mm)	ウェブ製造法	熱処理 方法	熱処理温度 (°C)	熱処理時間 (秒)	圧縮回復率 (%)	密度 (g/cm³)	目付 (g/cm²)
実施例 1	HDPE	PP	32	5	15	エレクトロ法	T.A.	138	20	84	0.061	270
実施例 2	HDPE	PET	40	5	9	エレクトロ法	T.A.	138	20	92	0.063	300
実施例 3	HDPE	PP	80	10	8	エレクトロ法	T.A.	138	20	88	0.087	350
実施例 4	HDPE	PP	55	40	19	エレクトロ法	T.A.	138	20	80	0.092	200
実施例 5	PP	PET	45	10	3	エレクトロ法	T.A.	165	20	89	0.066	400
実施例 6	HDPE	PP	50	10	16	抄造法	T.A.	138	20	86	0.088	130
実施例 7	HDPE	PP	50	5	16	エレクトロ法	P.B.	135	20	93	0.071	70
実施例 8	HDPE	PP	60	20	14	エレクトロ法	T.A.	145	20	95	0.055	330
実施例 9	HDPE	PP	50	10	14	エレクトロ法	T.A.	145	30	95	0.056	330
実施例 10	LDPE	PP	60	25	13	エレクトロ法	T.A.	138	20	83	0.069	190
実施例 11	LLDPE	PET	65	5	20	エレクトロ法	T.A.	138	20	84	0.042	650
比較例 1	HDPE	PP	30	5	9	エレクトロ法	T.A.	145	35	93	0.13	300
比較例 2	HDPE	PP	2	10	10	エレクトロ法	T.A.	138	20	63	0.038	200
比較例 3	HDPE	PP	10	5	13	エレクトロ法	T.A.	138	20	71	0.046	200
比較例 4	HDPE	PP	50	15	0	エレクトロ法	T.A.	138	20	95	0.19	350
比較例 5	HDPE	PP	40	50	15	カード法	T.A.	138	20	70	0.060	80

[0028]  
[Table 2]

番号	通液速度 (秒)
実施例 1	0. 9 8
実施例 2	0. 7 3
実施例 3	0. 4 4
実施例 4	0. 7 8
実施例 5	0. 5 8
実施例 6	0. 9 9
実施例 7	0. 8 0
実施例 8	0. 6 9
実施例 9	0. 7 2
実施例 10	0. 5 7
実施例 11	0. 4 9
比較例 1	3. 5 1
比較例 2	2. 8 8
比較例 3	2. 0 6
比較例 4	3. 8 1
比較例 5	1. 9 8

[Table 2; Translation]

1. Number
2. Speed of the passing liquid (seconds)
3. Carried out example 1
4. Carried out example 2
5. Carried out example 3
6. Carried out example 4
7. Carried out example 5
8. Carried out example 6
9. Carried out example 7
10. Carried out example 8
11. Carried out example 9
12. Carried out example 10
13. Carried out example 11
14. Comparison example 1
15. Comparison example 2
16. Comparison example 3
17. Comparison example 4
18. Comparison example 5

[0029]  
Working Example 12

It cut off non-woven fabrics of Working Example 1 in size of 15 cm X 15 cm, polyethylene film of same size laminated, administered embossing thermal processing with 125 deg C and made bed wiping cleaning wipe.

[0030]  
Working Example 13

It cut off non-woven fabrics of Working Example 1 in size of 10 cm X 25 cm, wrapping non-woven fabrics entirely

which is cut off with tissue paper, it made absorber for the paper diaper.

[0031]

Working Example 14

hot-melt adhesion doing melt blown non-woven fabrics of weight 10g/m<sup>2</sup> in one surface of non-woven fabrics of Working Example 1, it made short fiber non-woven fabrics laminate and cut off in size of 10 cm X 25 cm, wrapping non-woven fabrics entirely which is cut off with tissue paper, it made absorber for paper diaper.

[0032]

Comparative Example 6

It cut off non-woven fabrics of Comparative Example 1 in size of 15 cm X 15 cm, polyethylene film of same size laminated, administered embossing thermal processing with 125 deg C and made bed wiping cleaning wipe.

[0033]

Comparative Example 7

It cut off non-woven fabrics of Comparative Example 2 in size of 15 cm X 15 cm, polyethylene film of same size laminated, administered embossing thermal processing with 125 deg C and made bed wiping cleaning wipe.

[0034]

Comparative Example 8

It cut off non-woven fabrics of Comparative Example 1 in size of 10 cm X 25 cm, wrapping non-woven fabrics entirely which is cut off with tissue paper, it made absorber for the paper diaper.

[0035]

Comparative Example 9

It cut off non-woven fabrics of Comparative Example 2 in size of 10 cm X 25 cm, wrapping non-woven fabrics entirely which is cut off with tissue paper, it made absorber for the paper diaper.

[0036]

Clear sort, short fiber non-woven fabrics of this invention as it is superior in water permeability, the texture on external appearance being satisfactory, is effective from Table 2 as absorbent goods.

As for Comparative Example 1~5, because empty gap size inside short fiber non-woven fabrics is not satisfactory, passed water velocity becomes small.

As for Comparative Example 1, density of short fiber non-woven fabrics 0.13 because is, empty gap size inside non-woven fabrics has become small.

As for Comparative Example 2, 3, because denier of fiber is thin, compression recovery ratio becomes 63% and 71%, not to be a uniform, partially deviation can do the empty gap size inside non-woven fabrics and passed water velocity becomes small.

In addition, size of empty gap becomes small.

Therefore, resistance at time of passed liquid of solution becomes large, flow rate becomes small.

In addition, furthermore with solution where viscosity is high, the further flow rate becomes small.

As for Comparative Example 4, because there is not a crimp in fiber, density becomes  $0.19 \text{ g/cm}^3$ , because empty gap size becomes very small, passed water velocity decreases considerably.

In regard to Comparative Example 5, passed water velocity has become small because fiber length is long.

[0037]

When Working Example 12 and Comparative Example 6, 7 are compared, as for Working Example 12 because passed water velocity is larger than Comparative Example 6, 7, when you use as wipe removal of excess moisture being quick and, workability improved considerably.

In addition, wiping or other effect to which as for Comparative Example 7, because the compression recovery ratio is low, when you use, as wipe maintenance of shape is difficult, makes objective decreases considerably.

[0038]

When Working Example 13,14 and Comparative Example 8, 9 are compared, Working Example 13,14 because flow rate is large, is faced as absorber, furthermore because empty gap size is satisfactory, urine also soft sufficient absorbency effect is acquired furthermore even with flight etc.

In addition, wet hand with surface does not reveal due to the fact that flow rate is large, discomfort which is a item which is needed as diaper is held down, is possible.

[0039]

[Effects of the Invention]

With quite highly functional non-woven fabrics which possesses compression recovery ratio and flow rate where the short fiber non-woven fabrics which is disclosed with this invention, from until recently with the bulky whose production is difficult, has satisfactory texture, is high, it is useful in various absorbent goods, wipe, filter.